

Amendments to the Claims:

- 1 1. (currently amended) A machine-implemented method for management of network
2 addresses comprising the steps of:
3 determining an address utilization state of a network, wherein the address utilization
4 state is based on a percentage, of a certain address space allocated to a network
5 service provider, in use by network access devices used by subscribers of the
6 network service provider; and
7 performing a specified action ~~involving~~ on addresses from the certain address space in
8 response to the address utilization state.

- 1 2. (original) The method of claim 1 further comprising the steps of:
2 comparing the address utilization state with condition information;
3 upon the address utilization state meeting the condition, completing the step of
4 performing a specified action wherein the specified action is associated with
5 the condition; and
6 upon the address utilization state not meeting the condition, completing the step of
7 performing a specified action wherein the specified action is a null action.

- 1 3. (previously presented) The method of claim 1 wherein the action is allocating a group
2 of specific addresses to a particular network, for assigning the addresses to devices on
3 the particular network.

- 1 4. (original) The method of claim 1 wherein the action is reconfiguring addresses on a
2 particular network including more than one address block, resulting in decreasing the
3 number of address blocks associated with the particular network.

- 1 5. (original) The method of claim 4 wherein the addresses are reconfigured based on an
2 existing address block.

- 1 6. (original) The method of claim 1 wherein the action is reclaiming specific addresses
2 from a particular network, resulting in making the addresses unassignable to devices
3 on the particular network.

1 7. (original) The method of claim 1 wherein the action is notifying a network access
2 manager that an address utilization condition is met and awaiting a response from the
3 network access manager as to further action to perform.

1 8. (original) The method of claim 1 wherein the step of determining the state of address
2 utilization comprises querying a Dynamic Host Configuration Protocol (DHCP)
3 server.

1 9. (currently amended) A machine-implemented method for automated management of
2 network addresses comprising the steps of:
3 receiving condition information describing a network address utilization state for
4 triggering an action;
5 receiving action information describing an action associated with the condition;
6 determining an address utilization state of a network, wherein the address utilization
7 state is based on a percentage, of a certain address space allocated to a network
8 service provider, in use by network access devices used by subscribers of the
9 network service provider; and
10 performing the specified action involving on addresses from the certain address space
11 in response to the address utilization state meeting the condition.

1 10. (previously presented) The method of claim 9 wherein the description of the condition
2 and the specification of the action are received from a broadband network access
3 provider that is responsible for distributing network addresses to devices used by
4 subscribers of a network service provider that provides network access through the
5 access network of the network access provider.

1 11. (original) The method of claim 9 wherein the step of determining the address
2 utilization state comprises querying a Dynamic Host Configuration Protocol (DHCP)
3 server.

1 12. (original) The method of claim 9 wherein the step of performing the specified action
2 comprises the steps of:

3 defining to an address assignor one or more ranges of network addresses wherein the
4 ranges include addresses that are assignable to devices on a network; and
5 configuring at least one routing means on the network to support routing
6 transmissions to at least one of the network addresses.

1 13. (original) The method of claim 12 wherein the step of configuring at least one routing
2 means comprises the steps of:
3 creating one or more sub-interfaces on a physical interface of the routing means,
4 wherein each sub-interface is associated with a particular network service
5 provider; and
6 assigning one or more sub-networks to one or more of the sub-interfaces.

1 14. (original) The method of claim 12 wherein the step of performing the specified action
2 further comprises the steps of:
3 specifying to the address assignor one or more sub-networks to which any of the one
4 or more defined network address ranges are assignable;
5 reserving a network address for a particular router means associated with a particular
6 sub-network from the one or more sub-networks, wherein the reserved
7 network address is from a defined address range assigned to the particular sub-
8 network; and
9 specifying to the address assignor a particular default routing means for a particular
10 device on the network that is assigned a network address from any of the one
11 or more defined address ranges.

1 15. (original) The method of claim 12 wherein the step of defining to an address assignor
2 one or more ranges of network addresses comprises proportionally associating a range
3 of network addresses to routing means based on a previous distribution of addresses
4 associated with the routing means.

1 16. (original) The method of claim 9 wherein the step of performing the specified action
2 comprises the steps of:

3 defining to an address assignor one or more ranges of network addresses wherein the
 4 ranges include addresses that are assignable by the address assignor to devices
 5 on a network and wherein the ranges of network addresses are newly defined
 6 to the address assignor;
 7 configuring at least one routing means on the network to support routing
 8 transmissions to at least one of the network addresses;
 9 specifying to the address assignor one or more sub-networks to which any of the one
 10 or more defined address ranges are assignable;
 11 reserving a network address for a particular router means associated with a particular
 12 sub-network from the one or more sub-networks, wherein the reserved
 13 network address is from a defined address range assigned to the particular sub-
 14 network;
 15 specifying to the address assignor a particular default routing means for a particular
 16 device on the network that is assigned a network address from any of the one
 17 or more defined address ranges; and
 18 directing the address assignor to discontinue renewing and distributing network
 19 addresses from one or more old ranges of network addresses other than those
 20 newly defined to the address assignor.

1 17. (original) The method of claim 16, further comprising, upon passing of one address
 2 lease cycle associated with the address assignor and each network device administered
 3 by the address assignor, the steps of:
 4 removing from the address assignor the capability to assign to network devices the
 5 addresses from the one or more old ranges, and
 6 removing from routing means the capability to support routing transmissions to the
 7 network addresses from the one or more old ranges.

1 18. (original) The method of claim 16 wherein the step of configuring routing means
 2 comprises the steps of:

3 creating one or more sub-interfaces on a physical interface of the routing means,
 4 wherein each sub-interface is associated with a particular network service
 5 provider; and
 6 assigning one or more sub-networks to one or more of the sub-interfaces.

1 19. (original) The method of claim 9 wherein the step of performing the specified action
 2 comprises the steps of:
 3 directing an address assignor to discontinue renewing and distributing network
 4 addresses from one or more ranges of network addresses; and
 5 upon passing of one address lease cycle associated with the address assignor and each
 6 network device administered by the address assignor, removing from the
 7 address assignor the capability to assign to network devices the addresses from
 8 the one or more ranges, and removing from one or more routing means the
 9 capability to support routing transmissions to the network addresses from the
 10 one or more ranges.

1 20. (currently amended) A machine-implemented method for automated management of
 2 network addresses comprising the steps of:
 3 receiving condition information describing a network address utilization state for
 4 triggering an action;
 5 receiving action information describing an action associated with the condition;
 6 determining an address utilization state of a network, wherein the address utilization
 7 state is based on a percentage, of a certain address space allocated to a network
 8 service provider, in use by network access devices used by subscribers of the
 9 network service provider; and
 10 performing the specified action ~~involving~~ on addresses from the certain address space
 11 in response to the address utilization state meeting the condition;
 12 wherein the steps are performed at one or more facilities from a hierarchical group of
 13 facilities described, in increasing levels, as a cable head-end facility, a cable
 14 regional data center facility, and a cable national data center facility; and

15 wherein the steps are performed at one of the one or more facilities to manage
16 network addresses of facilities on the same hierarchical level.

1 21. (original) The method of claim 20 wherein the steps are performed at one of the one
2 or more facilities to manage network addresses of facilities on a lower hierarchical
3 level.

1 22. (currently amended) A machine-implemented method for automated management of
2 network addresses comprising the steps of:
3 receiving condition information describing a network address utilization state for
4 triggering an action;
5 receiving action information describing an action associated with the condition;
6 determining an address utilization state of a network, wherein the address utilization
7 state is based on a percentage, of a certain address space allocated to a network
8 service provider, in use by network access devices used by subscribers of the
9 network service provider, and wherein the available network addresses are
10 substantially utilized and responsively performing the steps of:
11 defining to an address assignor one or more ranges of network addresses wherein the
12 ranges include addresses that are assignable to devices on the network;
13 configuring at least one routing means on the network to support routing
14 transmissions to at least one of the network addresses;
15 specifying to the address assignor one or more sub-networks to which any of the one
16 or more defined network address ranges are assignable;
17 reserving a network address for a particular router means associated with a particular
18 sub-network from the one or more sub-networks, wherein the reserved
19 network address is from a defined address range assigned to the particular sub-
20 network; and
21 specifying to the address assignor a particular default routing means for a particular
22 device on the network that is assigned a network address from any of the one
23 or more defined address ranges.

1 23. (currently amended) A computer-readable medium carrying one or more sequences of
2 instructions for managing network addresses, wherein execution of the one or more
3 sequences of instructions by one or more processors causes the one or more
4 processors to perform steps of:
5 determining an address utilization state of a network, wherein the address utilization
6 state is based on a percentage, of a certain address space allocated to a network
7 service provider, in use by network access devices used by subscribers of the
8 network service provider; and
9 performing a specified action ~~involving~~ on addresses from the certain address space in
10 response to the address utilization state.

1 24. (original) The computer-readable medium of claim 23 wherein execution of the one
2 or more sequences of instructions by one or more processors causes the one or more
3 processors to perform the specified action by causing the one or more processors to
4 perform a step of:
5 allocating specific addresses to a particular network, the addresses being assignable to
6 devices on the particular network.

1 25. (original) The computer-readable medium of claim 23 wherein execution of the one
2 or more sequences of instructions by one or more processors causes the one or more
3 processors to perform the specified action by causing the one or more processors to
4 perform a step of:
5 reconfiguring addresses on a particular network including more than one address
6 block, resulting in decreasing the number of address blocks associated with
7 the particular network.

1 26. (original) The computer-readable medium of claim 23 wherein execution of the one
2 or more sequences of instructions by one or more processors causes the one or more
3 processors to perform the specified action by causing the one or more processors to
4 perform a step of:

5 reclaiming specific addresses from a particular network, resulting in making the
6 addresses unassignable to devices on the particular network.

1 27. (original) The computer-readable medium of claim 23 wherein execution of the one
2 or more sequences of instructions by one or more processors causes the one or more
3 processors to perform the specified action by causing the one or more processors to
4 perform a step of:

5 notifying a network access manager that an address utilization condition is met and
6 awaiting a response from the network access manager as to further action to
7 perform.

1 28. (original) The computer-readable medium of claim 23 wherein execution of the one
2 or more sequences of instructions by one or more processors causes the one or more
3 processors to perform the step of determining a state of address utilization by causing
4 the one or more processors to perform a step of:

5 querying a Dynamic Host Configuration Protocol (DHCP) server application.

1 29. (currently amended) A computer system comprising:

2 a network interface; and

3 one or more processors connected to the network interface, the one or more

4 processors configured for

5 receiving a description of a condition describing a network address utilization state for
6 triggering an action;

7 determining an address utilization state of a network, wherein the address utilization

8 state is based on a percentage, of a certain address space allocated to a network

9 service provider, in use by network access devices used by subscribers of the

10 network service provider; and

11 performing the action ~~involving~~ on addresses from the certain address space in

12 response to the address utilization state meeting the condition.

1 30. (currently amended) An apparatus for managing network addresses, the apparatus
2 comprising:

means for receiving a description of a condition describing a network address utilization state for triggering an action;

means for determining an address utilization state of a network, wherein the address utilization state is based on a percentage, of a certain address space allocated to a network service provider, in use by network access devices used by subscribers of the network service provider; and

means for performing the action ~~involving~~ on addresses from the certain address space in response to the address utilization state meeting the condition.

31. (currently amended) A computer system comprising:

a network interface; and

one or more processors connected to the network interface, the one or more processors configured for

receiving condition information describing a network address utilization state for triggering an action;

receiving action information describing an action associated with the condition;

determining an address utilization state of a network, wherein the address utilization state is based on a percentage, of a certain address space allocated to a network service provider, in use by network access devices used by subscribers of the network service provider, and wherein the available network addresses are substantially utilized and responsively performing the steps of:

defining to an address assignor one or more ranges of network addresses

wherein the ranges include addresses that are assignable to devices on the network;

configuring at least one routing means on the network to support routing transmissions to at least one of the network addresses;

specifying to the address assignor one or more sub-networks to which any of the one or more defined network address ranges are assignable;

reserving a network address for a particular router means associated with a particular sub-network from the one or more sub-networks, wherein the reserved network address is from a defined address range assigned to the particular sub-network; and

specifying to the address assignor a particular default routing means for a particular device on the network that is assigned a network address from any of the one or more defined address ranges.

32. (currently amended) An apparatus for automated management of network addresses, the apparatus comprising:
- means for receiving condition information describing a network address utilization state for triggering an action;
 - means for receiving action information describing an action associated with the condition;
 - means for determining an address utilization state of a network, wherein the address utilization state is based on a percentage, of a certain address space allocated to a network service provider, in use by network access devices used by subscribers of the network service provider;
 - means for defining to an address assignor one or more ranges of network addresses wherein the ranges include addresses that are assignable to devices on the network;
 - means for configuring at least one routing means on the network to support routing transmissions to at least one of the network addresses;
 - means for specifying to the address assignor one or more sub-networks to which any of the one or more defined network address ranges are assignable;
 - means for reserving a network address for a particular router means associated with a particular sub-network from the one or more sub-networks, wherein the reserved network address is from a defined address range assigned to the particular sub-network; and
 - means for specifying to the address assignor a particular default routing means for a particular device on the network that is assigned a network address from any of the one or more defined address ranges.